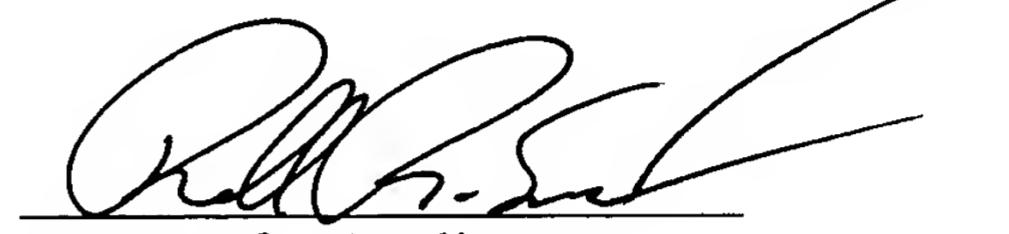


Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page(s) is captioned "**Version With Markings To Show Changes Made.**"

Respectfully submitted,



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Version With Markings To Show Changes Made

In the Specification:

The first paragraph of the application entitled CROSS
REFERENCE TO RELATED APPLICATIONS has been amended as follows:

Cross reference to related application Serial No. 10/033,482 [(our
Docket # 83921,] entitled CAMERA ELECTRONIC SYSTEM AND METHOD
OF ASSEMBLING SAME filed in the name of Douglas W. Constable on
[herewith] December 27, 2001.

The first paragraph on page 4 has been amended by the two
paragraphs as set forth below:

In each of the '412 and '095 references, the first circuit is [defined
to be joined to only one second circuit. Thus, each combination of] physically
joined to the second circuit in a manner that prevents separation. The combined
circuits are installed into the camera. During recycling, the first and second
circuit boards [can perform only a second set of camera functions. Where it is
desired during recycling,] must be [to provide a camera that performs a third set
of functions, an entirely different second circuit board must be provided. Thus
where the combination of a first circuit board and second circuit board perform a
set f n functions, a totally different second circuit board is required in order to
perform the set of n-1 functions. Similarly, where the combination of a first
circuit board and second circuit board that performs the set of n functions requires
a totally different second circuit board to perform n+1 functions. This, of course,
requires a plurality of second circuit board with each second circuit board being
specifically tailored to the desired functionality of the camera. As discussed
above, providing individualized circuit boards to each type of camera type raises
the difficulties and cost associated with camera manufacture and recycling]
physically separated. This joining and separating requires additional labor during
the manufacturing and recycling processes. Further, this joining and separating
can cause physical damage to the components of either the first circuit board or
the second circuit board. Thus, what is needed is a method for assembling and
recycling a camera [electronic circuit] that combines [multiple] two or more
electronic circuits in a way that reduces [costs associated with adding and

removing electronic functions from the camera electronic circuit] the labor and risk of damage incident to the joining of the first and second circuits while ensuring that the circuits stay in joined relationship during the life cycle of the one time use camera. What is also needed is a method for assembling and recycling the camera that reduces the amount of labor and the risk of damage that is incident with the separation of the circuit boards.

It will also be appreciated that during the recycling process, it is necessary to provide positive assurance that the camera system is operating as a camera of the first type or a camera of the second type. Thus, what is also needed is a camera system having a second circuit, the presence of which is easily detectable after manufacture by testing or quality assurance monitoring equipment.

Please amend the SUMMARY OF THE INVENTION as set forth below:

[In one aspect of the present invention, a camera electrical system is provided for use in a family of recyclable cameras each having a set of desired electronic functions. The camera electrical system has a first electronic circuit for performing a first set of electronic operations including charging a flash capacitor and discharging the flash capacitor through a flash bulb to cause a flash of artificial light during photography said first electronic circuit having a first set of electrical contacts. A plurality of second electronic circuit is provided. Each second circuit has contacts to engage at least one of the first set of electrical contacts, wherein the first electronic circuit and each of said plurality of second circuits are adapted to cooperate in a combined circuit comprising the first electronic circuit and more than one of said second circuits to perform the set of desired camera functions.]

[In another aspect of the present invention, a camera electronic circuit is provided. The camera electronic circuit having a first electronic circuit for performing a first set of electronic operations including charging a flash capacitor and discharging the flash capacitor through a flash tube to cause a flash of light during photography said first electronic circuit having a first set of electrical contacts. A second electronic circuit is provided having a second set of electrical contacts at least one of which engages the first set of electrical contacts,

to cause first and second electronic circuits to cooperate to perform a second set of camera functions. At least one third electronic circuit is also provided each having a third set of electrical contacts, with at least one of the third set of electrical contacts engaging at least one of the first set or second set of contacts to combine the first, second and third electronic circuits so that the combined circuit can perform a third set of camera functions.]

In one aspect of the present invention, a camera is provided having a first electronic circuit board with first electronic circuit to perform a first set of camera functions. The first electronic circuit has a first set of electrical contacts. A second electronic circuit board is also provided. The second electronic circuit board has a second electronic circuit with a second set of electrical contacts to engage the first set of electrical contacts. The second electronic circuit is defined to cooperate with first electronic circuit to perform a second set of camera functions when the second set of electrical contacts engage the first set of electrical contacts. A frame holds the first electronic circuit board.

A cover joinable to the frame is provided. A mounting is also provided for holding the second electronic circuit board and positioning the second set of electrical contacts so that when the cover is joined to the frame the second set of electrical contacts are positioned to engage the first set of electrical contacts to cause the first electronic circuit board to cooperate with the second electronic circuit to perform the second set of camera functions.

In another aspect of the present invention, a camera having a cover is provided. A drive member is mounted to the cover and movable between a first position and a second position. A first electronic circuit board having a first electronic circuit that performs at least one of a first set of camera functions in response to movement of the drive member into the second position is also provided. A second electronic circuit board having a second electronic circuit that combines with the first electronic circuit to cause the combined circuit to perform a second set of camera functions is also provided. A mounting positions the second electronic circuit board between the drive member and the first electronic circuit, with the second electronic circuit positioned to block movement of the drive member at a third position and prevent movement of the drive member into the second position.

The last paragraph on page 8 has been amended as follows:

By using such a camera electronic system 40, a family of different one time use cameras 10 can be developed that incorporate [wiring] first circuit board 42. This common use of [wiring] first circuit board 42 reduces the development costs and cost of recycling each camera 10 in the family

The paragraph beginning on page 9, line 16 has been amended as set forth below:

The engagement of first electronic circuit 44 to second electronic circuit 50 in camera 10 will now be described with reference to Figs. 2 - 5. Figs. 2[,] and 3 show a diagrammatic view of the relationship between first electronic circuit 44, driving member 68 and second electronic circuit 50. Fig. 4 shows a perspective assembly view of camera 10 of Fig. 1 having the second electronic circuit 50 mounted on a second [wiring] circuit board 52 while Fig. 5 shows camera 10 in an assembled form. As is shown in Figs 2 - 5 second circuit board 52 is held by mounting 70. In the embodiment shown, mounting 70 extends from second cover 14 and holds second circuit board 52 so that the first set of electrical contacts 48 is aligned with the second set of electrical contacts 54 as second cover 14 is joined to first cover 12. As is shown in Fig. 5, when first cover 12 is assembled to second cover 14 the first set of electrical contacts 48 and the second set of electrical contacts 54 are electrically joined. It will be appreciated that by using second cover 14 to position and hold the second set of electrical contacts 54 in electrical contact with first set of electrical contacts 48, first [camera] electronic circuit 44 can be joined to second [camera] electronic circuit [54] 50 in order to achieve the electrical engagement necessary to permit the first electronic circuit 44 and the second electronic circuit 50 to cooperate to perform the second set of functions. This substantially reduces the possibility that first electronic circuit 44 or second electronic circuit 50 will be damaged by the process of mechanically joining or separating the electrical circuits.

The paragraph beginning on page 10, line 5 has been amended as set forth below:

Further, it will be appreciated that in the embodiment shown in Figs. 1-5, mounting 70 slidably [received] receives and holds second circuit board 52. Thus, during recycling and manufacture, second circuit board 52 can be

installed and removed from second cover 14 in a simple manner. This also greatly simplifies the process of modifying the set of camera functions that camera 10 performs.

The paragraph beginning on page 10, line 23 has been amended as set forth below:

It will further be appreciated that to reduce the cost of first [wiring] circuit board 42, or for other reasons, first [wiring] circuit board 42 and first [camera] electronic circuit 44 can be defined in such a manner that activation of certain functions of the first electronic circuit 44 interferes with the performance of the second set of camera functions. This can happen where, for example, one or more of the second set of camera functions is incompatible with the one or more of the first set of camera functions. Under such circumstances it is necessary to prevent the first electronic circuit 44 from performing the interfering functions. In the embodiment shown in Figs. 2 - 6, the driving [circuit 48] member 68 is disabled mechanically by interposing second circuit board 52 in the path of travel of driving member 68. This prevents driving member 68 from engaging dome switch 46 which in turn, prevents first electronic circuit [46] 44 from being operative in a manner that interferes with the performance of the second set of camera functions. Similarly, it will be appreciated that second [wiring] circuit board 52 can also be used to interfere with the passage of light and other environmental conditions that can cause other detectors (not shown) of first election circuit to interfere with the performance of the second set of camera functions.

The paragraph beginning on page 12, line 14 has been amended as set forth below:

Fig. 7 shows a detailed embodiment of a [wiring board] first electronic circuit 42 having a flash circuit 200 for use in providing a press and hold type camera flash. Flash circuit 200 incorporates a power source 201, for example, a battery such as one 1.6 volt cell. The flash [charger] circuit [201] 200 includes a self-oscillating flash charging circuit 260, and a flash illumination circuit 265. Flash charging circuit 260 comprises an oscillating transistor 205, step-up oscillating transformer 207, rectifier diode 208, LED ready light 204. A manually operated, normally open push button switch, 206, is operated by, for

example, a driving member 68 passing through a port 69 in second cover [12] 14 as is generally described above. When closed, switch 206 causes flash charging circuit 260 to store electrical energy in a flash energy capacitor 214. The customer presses switch 206 and holds it closed until the LED ready light 204 illuminates to indicate that flash capacitor 214 is charged to flash ready voltage. The customer then repeats this procedure for the next picture.

The paragraph on page 13, line 3 has been amended as set forth below:

Also shown in Fig. 7 are contacts 215a - 221a. These contacts provide electrical connection points at strategic locations within the [camera] flash circuit 200. As discussed above, contacts 215a - 221a are provided so that they can be engaged by a second electronic circuit, shown in this embodiment as 252 to cause the combined flash circuit 200 and [a] second electronic circuit 252 to perform a [different] desired set of functions.

The paragraph beginning on page 13, line 9 has been amended as set forth below:

The embodiment of Fig. 8 shows an embodiment of [secondary] second [driving] electronic circuit 252 having [electrodes] second contacts 215b - 221b that engage respectively contacts 215a – 221a to interconnect the operation of flash [charge] circuit 200 and second electronic circuit 252. Second electronic circuit 252 contains a timeout circuit 270, an auto-restart circuit 280 and a fatbit recording circuit 290. Timeout circuit 270 includes transistors 222 and 223, timing capacitor 230 and “one-touch” push button switch 233 and diode 232. Auto-restart circuit 280 includes transistors 224, 225, diode 237 and capacitor 235. Fatbit recording circuit 290 includes fatbit recording LED 240, fatbit selection switch 242, zener diode 238 and capacitor 241.

The paragraph beginning on page 13, line 19 has been amended as set forth below:

Referring now to Fig. 8 the operation of the flash charge circuit 200 in conjunction with second driving circuit 252 will be described. It will be recalled that flash [charge] circuit 200 operates in the “press and hold” mode when switch 206 is closed. This switch must be functionally disabled in order to permit flash [charge] circuit 200 to operate in a different manner. As has been

described in greater detail above, in accordance with an embodiment of the present invention, second [driving] electronic circuit 252 is deposited on a second wiring board such as second wiring board 52 shown in Fig. 3. This second wiring board is physically interposed between driving member 68 and switch 206. This prevents driving [feature] member 68 from closing switch 206 preventing flash [charge] circuit [230] 200 from operating in the "press and hold" mode. Advantageously, "one-touch" push button switch 233 can be disposed on second wiring board 52 in the path of travel of driving [feature] member 68. Thus, driving member 68 can be used to cause [camera wiring] flash circuit 200 to activate the "press and hold mode" when second electronic circuit 252 is not present or to cause second [driving] electronic circuit 252 to enter the "one touch" mode when second electronic circuit 252 is present.

The paragraph beginning on page 16, line 5 has been amended as set forth below:

Second electronic circuit 252 also comprises a [fat bit] fatbit recording circuit [270] 290. A [fat bit] fatbit is a term that is used to describe optically recorded metadata that is recorded on a film by a one time use camera. When a [fat bit] fatbit is detected during photofinishing, the photofinisher knows[, for example,] to print the image using, for example, a panoramic aspect ratio, to execute digital zoom or to perform some other type of special image processing procedure. Essentially the [fat bit] fatbit recorder comprises a light emitting diode that exposes a predefined non-image portion of the image recorded on the film.

The paragraph beginning on page 16, line 13 has been amended as follows:

[Fat bit] Fatbit recording circuit 290 works as follows: capacitor 235 is charged during closure of switch 211 and provides positive bias to the base of transistor 224 for a time period greater than the period for which switch 211 is closed, keeping transistors 224 and 225 on for this period. Transistor 225 provides a current path for positive pulses from the oscillation transformer 207b and this becomes the energy source for illuminating fat bit recording LED 240. The illuminating current flows from transistor 225 collector, zener diode 238, current limiting resistor 239, LED 240 and data recording on-off switch 242 to

positive battery potential 201a. The voltage of zener diode 238 is chosen so that it will not conduct when switch 233 is closed and thus no data recording will be made when switch 233 is pressed to initiate flash charging.

The paragraph beginning on page 16, line 30 has been amended as set forth below:

Fig. 9 shows another embodiment of a second electronic circuit 251 for use in a flash camera having one touch charging and that automatically restarts after charging. In this embodiment, [first electronic] flash circuit 200 is combined with a second electronic circuit 251 having a one touch charging circuit, a timeout circuit 270, an auto-restart circuit 280. These circuits combine in the manner described above to provide a circuit that executes one touch charging and that restarts the charging process immediately after a discharge of flash light.

The paragraph beginning on page 17, line 5 has been amended as set forth below:

Fig. 10 shows the [first electric] flash circuit 200 in conjunction with still another embodiment of a second electronic circuit [251] 250 module which provides “one-touch” operation of the charger. Second electronic circuit [251] 250 is a circuit that converts the operation of the flash charging system so that the user does not have to press and hold the flash charge button in order to permit the charger to charge capacitor 214. Instead, using the circuit by combining the circuit of Fig. 7 with [the one touch] circuit [251] 250, a circuit is provided that permits the user to touch the charge button only once to initiate a charge flash cycle, and then permits the user to release that charge button without interrupting the charging process. This combination circuit further is adapted to shut off the charging process when the appropriate charge is placed across capacitor 214. The customer presses and immediately releases switch 233 to initiate flash charging for about 30 seconds. The customer repeats this procedure for the next picture.

In the Claims:

Claims 1 through 19 have been cancelled.

Claims 35 through 69 are new.

In the Abstract:

Please amend the ABSTRACT as follows:

[In one aspect of the present invention, camera electrical system is provided for use in a family of recyclable cameras each have a set of desired electronic functions. The camera electrical system has a first electronic circuit for performing a first set of electronic operations including charging a flash capacitor and discharging the flash capacitor through a flash tube to cause a flash of light during photography; said first electronic circuit having a first set of electrical contacts. More than one second electronic circuit is provided. Each second circuit has contacts to engage at least one of the first set of electrical contacts, wherein the first electronic circuit and each of said second electronic circuits are adapted to cooperate in a combined circuit comprising the first electronic circuit and more than one of said second circuits to perform the set of desired camera functions.]

In one aspect of the present invention, a camera is provided having a first electronic circuit board with first electronic circuit to perform a first set of camera functions. The first electronic circuit has a first set of electrical contacts. A second electronic circuit board is also provided. The second electronic circuit board has a second electronic circuit with a second set of electrical contacts to engage the first set of electrical contacts. The second electronic circuit is defined to cooperate with first electronic circuit to perform a second set of camera functions when the second set of electrical contacts engage the first set of electrical contacts. A frame holds the first electronic circuit board.

A cover joinable to the frame is provided. A mounting is also provided for holding the second electronic circuit board and positioning the second set of electrical contacts so that when the cover is joined to the frame the second set of electrical contacts are positioned to engage the first set of electrical contacts to cause the first electronic circuit board to cooperate with the second electronic circuit to perform the second set of camera functions.